RE: CEAP and the Model
Gary Shenk to: Kelly Shenk 10/29/2010 08:25 AM

1 attachment

What are the differences in the CEAP report and the CBP model.doc

K,

I moved it to a word document so the formatting would stay between our systems.

- Gary

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-----Original Message-----
From: Shenk.Kelly@epamail.epa.gov [mailto:Shenk.Kelly@epamail.epa.gov]
Sent: Thursday, October 28, 2010 9:02 PM
To: Elworth.Lawrence@epamail.epa.gov
Cc: Gary Shenk
Subject: Re: CEAP and the Model

Wow, Larry. You are becoming quite the modeler!

Gary, can you take the first shot at refining the answers and I'll do the last sweep to make it palatible for both agencies?
Let's use a consistent name for the Chesapeake Bay Watershed Model throughout.
I'd like to wrap this up tomorrow if we can. K

CEAP and the Model

Lawrence Elworth
to:
Kelly Shenk, Shenk.Gary
10/28/2010 06:37 PM

Gary and Kelly - Please review the Q and A below - I think these are the main questions - if we can get these to Robert at USDA we can get their

input and see if they have other questions. Of course if you have other questions please feel free to add them - My thought is that we need to anticipate the questions (not all of them) and offer answers that both we and USDA can repeat without difficulty as such they don't have to be duly complicated and the answers need to be as simple and non-technical as possible. If the answers seem to be particularly simple-minded or inaccurate, remember the source and remember that this is the reason I am sending them to you for review. Many thanks, Larry

What are the differences in the CEAP report and the Bay model?

They are very different tools. One is unique and valuable snapshot of practices in a specific time series; the other provides a means for determining what loads the states will need to achieve in meting water quality objectives.

First, CEAP is an assessment of conservation practices on the ground. The Bay model is a management tool for determining the allocations for loadings of point and non-point sources in the Bay. The CEAP survey of farmers was conducted over four years to quantify the effects of conservation practices commonly used on cultivated cropland in the Chesapeake Bay region. The Chesapeake Bay model is a multi-partner model developed over 25 years that has gone through several major revisions (number?)

Second, they rely on very different sets of data. The CEAP assessment is based on surveys of farmers from 771 sample points in the Natural Resources Inventory. The Bay model is based on please complete this sentence

Third, they have been developed in very different ways. CEAP has been developed entirely by NRCS scientists. The Bay model is a collaborative effort of scientists EPA, Bay states, universities, non-profits, and federal agencies (including USDA and USGS).

Do the results of CEAP and the Bay model contradict each other?
No. The models use different methodologies; they are intended to serve different purposes; they are based on different data sets. The results in the CEAP report and the Chesapeake Bay Watershed Model both indicate that agricultural efforts have achieved progress in reducing nutrient and sediment pollution in the Bay and that there is still significant additional work to be done.

The CEAP report notes that it is statistically valid only to the 4 digit HUC yet the Bay model uses 92 different segments in the Bay. How can the Bay model be statistically valid at a finer level of disaggregation?
The 92 segments are derived from a regulatory mandate in the TMDL not from the Bay model. Given that the 92 segments are defined by the impaired waters in the Bay region as determined by the Clean Water Act and the TMDL, the Bay model is then used as a tool to allocate the amount of nutrient pollution that can be allowed in each the areas and, by extension, how much needs to be reduced. The States then have the ability to determine exactly where and how the reductions can be made.

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What are the differences in the CEAP report and the CBP model?

They are different tools developed for different purposes. CEAP is a unique and valuable snapshot of cultivated cropland management, implemented conservation practices, and the effectiveness of conservation practices and at a particular point in time. The CBP model is a tool to provide estimates of loads and management effectiveness across all sectors and for many different management scenarios.

They rely on very different sets of data. The CEAP assessment is based on extremely detailed surveys of farm practices from 771 sample points over four years in the Natural Resources Inventory. The agricultural portion of the CBP model is based on publicly available data sets on several different spatial scales. The county-level USDA-NASS census of agriculture spanning the years 1982-2007 is a major source of information. A few data sets are coarser, but land use and conservation practice implementation are input to the CBP model on a sub-county scale.

They have been developed in very different ways. CEAP has been developed primarily by USDA scientists and has a primary focus on estimating conservation practice effectiveness on cultivated cropland. The Bay model has a broader purpose of estimating management effectiveness on all sectors. The CBP model is a collaborative effort of EPA, Bay watershed states, universities, non-profits, and federal agencies including USDA and USGS over 25 years and is now in its fifth major version.

They are answering different questions. Aside from the above differences in scope and scale, the models have been used to answer different sets of questions. The CEAP model was used to estimate the effectiveness differences between worst case, best case, and current practices. The CBP model has been run with hundreds of management scenarios, including best and worst case, but the definitions are significantly different. Although not exact, the current practices scenario is the closest match between the two models and they are in good agreement on the percent of total load from cultivated cropland.

Do the results of CEAP and the Bay model contradict each other?
No. As discussed above the models are for different purposes and developed in different ways. However, the results of the CEAP and CBP models both indicate conservation practices are effective in reducing nutrient and sediment pollution, that agricultural efforts have achieved significant progress in implementing these practices, that targeting is important, and that there is still significant additional work to be done.

The models use data sets available on different scales. The CEAP 4-digit HUC scale is the scale at which the farmer-level surveys are representative of all cultivated cropland. The CBP model used data sets generally available on county or sub-county level.

The 92 segments are a regulatory mandate of the TMDL not from the Bay model. Given that the 92 segments are defined by the impaired waters of the Bay and its tidal tributaries as determined by the Clean Water Act and the TMDL, the Bay model is then used as a tool to allocate the amount of nutrient pollution that can be allowed in each the areas and, by extension, how much needs to be reduced. The initial allocation is made to 30 larger regions and then the States then have the ability to determine exactly where and how the reductions can be made. The final division into the 92 segments is informed by state Watershed Implementation Plans.